

DETAILED ACTION

Allowable Subject Matter

1. Claims 19 and 12-16 are allowed.
2. The following is an examiner's statement of reasons for allowance: The prior art fails to teach or render obvious a transfer device, which transfers a displacement of an actuator, comprising: a sealing system located at a first end of a housing, the sealing system including: a first tubular body rigidly coupled to or integral with the housing; a second body positioned inside the first tubular body, the second body rigidly coupled to or integral with the first plunger such that the second body moves relative to the first body during displacement of a first plunger relative to a second plunger; and an elastomer seal, which is inserted between the first and second body in the recess and thus in this area, closes and seals the space between the first and second body, wherein the elastomer seal comprises: a first side; a second side opposite the first side; an outer circumferential surface located generally between the first and second sides and forming a seal with the first body; an inner circumferential surface located generally between the first and second sides and forming a seal with the second body; and a first groove formed in the first side of the elastomer seal and spaced apart from the outer circumferential surface of the elastomer seal; the first groove extending at least partly along the recess while located at a distance from the wall of the recess; a second groove formed in the first side of the elastomer seal; a fluid chamber defined between the first plunger and the elastomer seal, wherein the elastomer seal prevents fluid in the fluid chamber from flowing past the elastomer seal and out of the fluid chamber,

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wherein the first side of the elastomer seal including the first and second grooves faces into the fluid chamber such that fluid pressure in the fluid chamber acts on the grooves to increase the sealing force of the elastomer seal; and a tensioning means configured to support the elastomer seal in the space between the first and second bodies; wherein the method for producing the device comprises the steps of: plasma-activating the first body and the second body; providing the first body and the second body with a bonding agent in the areas in which the elastomer seal is to be applied; and introducing and vulcanizing the elastomer seal such that the elastomer seal is positioned in the space between the first body and the second body; and configuring the spring to act on a side of the elastomer seal to support the elastomer seal in the space between the first body and the second body, the spring acting on the elastomer seal but not acting on the first or second tubular bodies.

3. Schwerdt et al. (U.S. Pat. No. 4,813,601) and Buffington (U.S. Pat. No. 2,046,724) were considered most pertinent to applicant's disclosure.

Schwerdt et al. discloses a device (fig. 3) as essentially claimed, except for the first and second grooves formed on the side of the elastomer seal 6.2.6 facing the fluid subchamber 6.6.1, and further does not disclose tensioning means that act on the elastomer seal but not on the first or second bodies. Modifying the groove location on the elastomer seal to the side facing the fluid subchamber would not be an obvious modification as it would likely affect the bending and movement of the elastomer seal as from that originally designed. It would also not be an obvious modification such that the tensioning means acted on the elastomer and not the first or second bodies since

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movement of the second body 6.2.5 by the tensioning means 4 is required for the functioning of Schwerdt's device.

Buffington discloses a method of vulcanizing a rubber elastomer seal (35) between two bodies (33, 37), as well as a method of clamping the seal with a plate (36) and spring (38) tensioning the plate (36). However, he discloses the vulcanizing method for fluids such as water, and the clamping method for fluids such as refrigerants, and not both methods together. Furthermore, Buffington's seal does not comprise a groove. Nor would it be obvious to add a groove to the seal, as it would likely affect and further complicate the sealing of the seal.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MARINA TIETJEN whose telephone number is (571) 270-5422. The examiner can normally be reached on Mon-Thurs, 9:00AM-5:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, ROBIN EVANS can be reached on (571) 272-4777. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. T./

Examiner, Art Unit 3753

/John K. Fristoe Jr./

Primary Examiner, Art Unit 3753